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Supplement of

Brief communication: Glacier thickness reconstruction on Mt. Kilimanjaro

Catrin Stadelmann et al.

Correspondence to: Catrin Stadelmann (catrin.stadelmann@fau.de)

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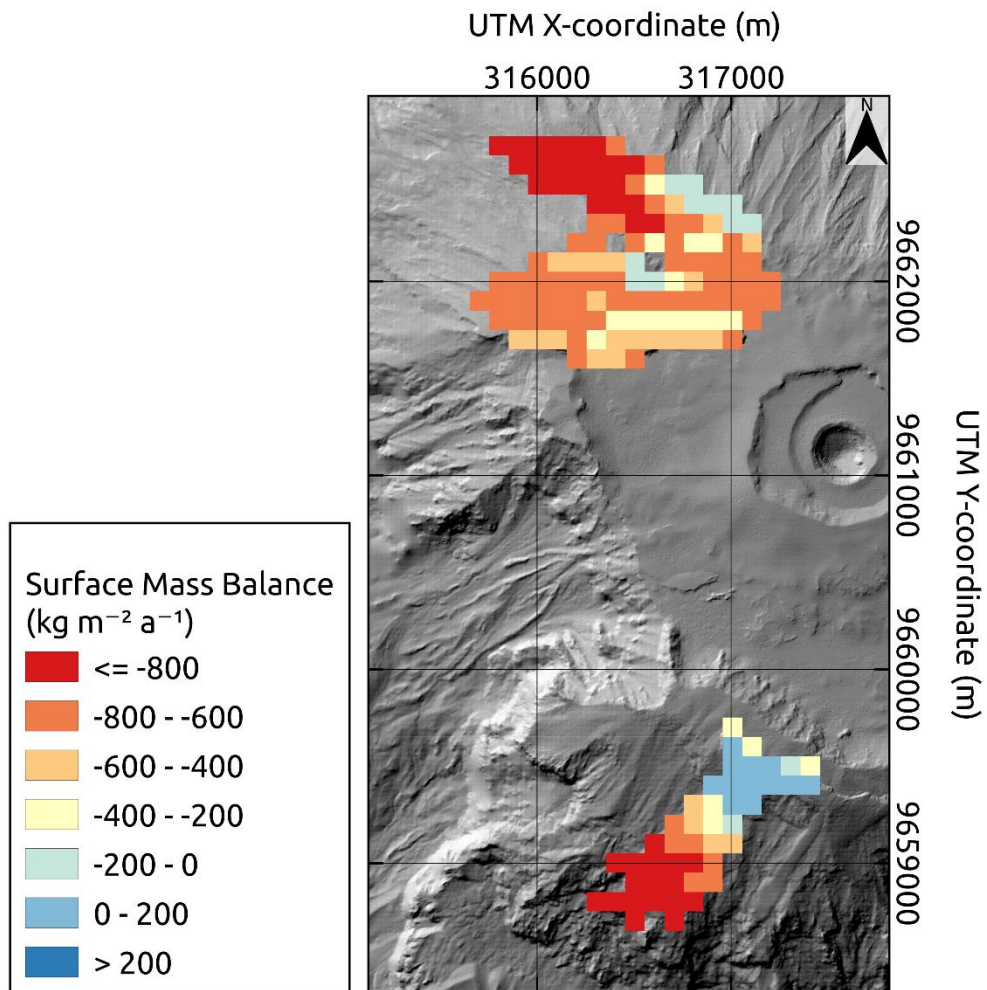


Figure S1: Spatial distribution of the mean annual surface mass balance (kg m^{-2}) from 2005-2013 generated with the distributed, physically-based MB model by Mölg et al. (2008, 2009). Background: hillshade of the KILISoSDM (Sirguey and Cullen 2013).

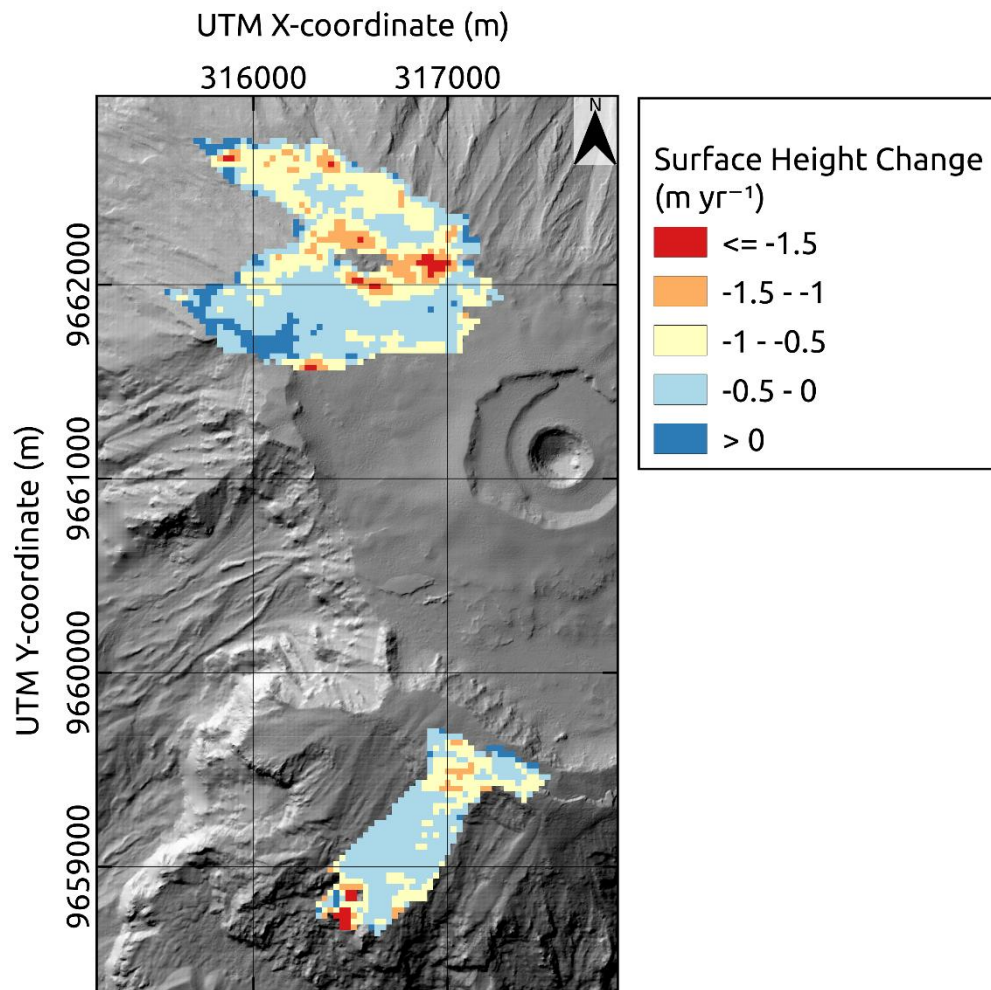


Figure S2: Spatial distribution of mean annual surface height change (m) from 2000-2011. The mean annual surface height change was generated from the difference between the SRTM DEM (2000) and the TanDEM-X DEM (2011). Background: hillshade of the KILISoSDem (Sirguy and Cullen 2013).

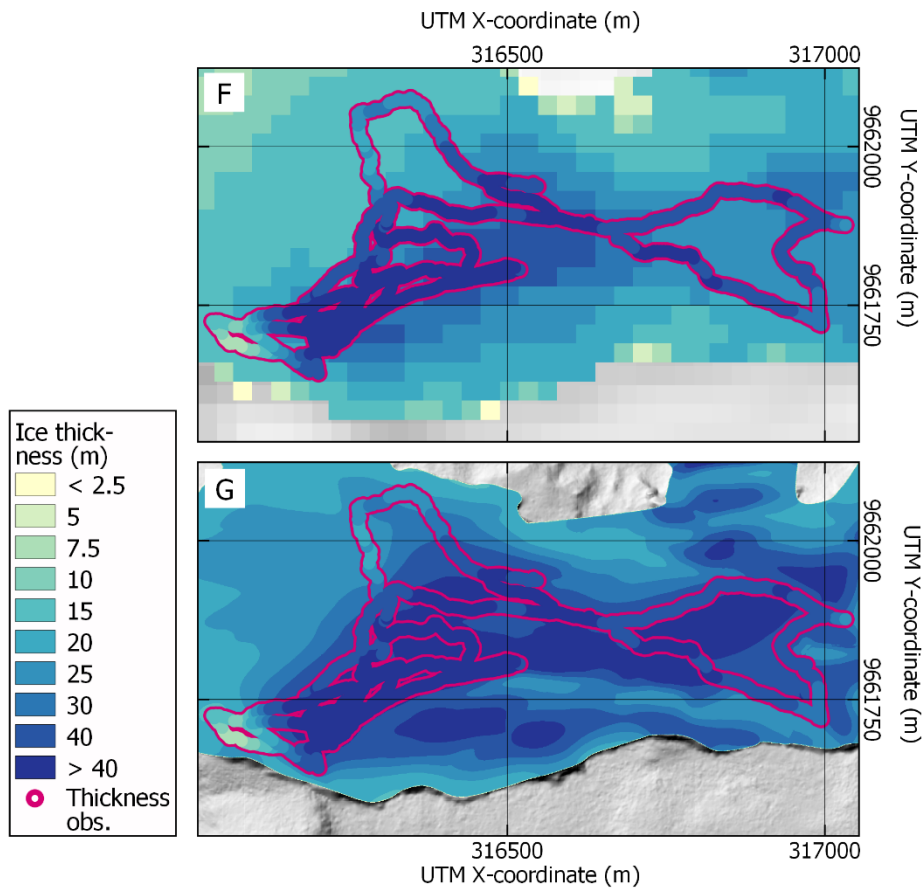


Figure S3: Reconstructed thickness map vs. GPR measurements on NIF (same as main article Fig. 2 D,E). The upper panel shows a closeup of NIF, overlaying the thickness map of Experiment 1 with the GPR thickness measurements (magenta contour, showing measured values in the same colourbar) by Bohleber et al. (2017). Background: SRTM DEM hillshade. Lower panel: same as upper panel but showing the high-resolution results for Experiment 3. Background: KILISoSDEM hillshade.

Table S1: Mean ice thickness (m) for the different reconstructions for Kersten Glacier and Northern Icefield presented in this study (Experiment 1-3), the consensus estimate from Farinotti et al. (2019) and the reconstruction from Bohleber et al. (2017), with additional data at the ice core locations C1-C3 (Fig. 1; Thompson et al. 2002).

	Year	Mean KG	Mean NIF	C1	C2	C3
Experiment 1	2000	6.2	13.7	31.0	26.9	12.4
Experiment 2	2000	6.9	23.4	46.5	42.5	22.9
Experiment 3	2011	9.3	26.6	46.6	42.1	23.5
Farinotti et al. 2019 consensus estimate	2000	21.5	27.1	34.4	32.6	13.6
Bohleber et al. 2017	2015		21.2 ± 1 m to 27 ± 2 m		44.7 ± 1.7	42.5 ± 1.5
Thompson et al. 2002	2000			50.9	50.8	49.0